

### Unit Overview

<b>Chiller Model</b>	CGAM
<b>Unit Nominal Tonnage</b>	70 tons
<b>Unit Type</b>	High efficiency
<b>Refrigeration Capacity</b>	67.69 tons
<b>Cooling Efficiency</b>	10.05 EER (Btu/W-h)
<b>IPLV.IP</b>	15.26 EER (Btu/W-h)
<b>NPLV.IP</b>	15.26 EER (Btu/W-h)
<b>Elevation</b>	0.000 ft
<b>Unit Frequency</b>	60. hertz
<b>Unit Voltage</b>	460. volt 3 phases
<b>Refrigerant Type</b>	R410A
<b>Number of compressor</b>	4
<b>Number of circuits</b>	2
<b>Number of capacity steps</b>	4
<b>Agency Listing</b>	UL/CUL
<b>Model Number</b>	CGAM070F2**2AXB2A1A1A1AX* A1C1A4XXXXXA1A3A1D1XXL*X



### Evaporator Information

#### Evaporator Application

Std cooling

Fluid Temperatures		Flow Rate		Freeze protection	
<b>Evaporator Leaving</b>	44.00 F	<b>Design Flow</b>	161.9 gpm	<b>Freeze protection</b>	With freeze protection
<b>Evaporator Entering</b>	53.99 F	<b>Min Flow</b>	79.50 gpm	<b>Fouling factor</b>	0.000100 hr-sq ft-deg F/ Btu
Fluid Properties		Fluid Pressure Drop		<b>Flow switch set point</b>	Flow switch set point 60 cm/sec
<b>Fluid Type</b>	Water	<b>Total PD evap+strainer</b>	16.7 ft H2O	<b>Water connection size</b>	3.000 in
<b>Freeze Point</b>	32.00 F	<b>Design Evap PD</b>	9.73 ft H2O		
		<b>Min PD</b>	4.31 ft H2O		

### Condenser Information

<b>Unit Application</b>	High ambient	<b>Fin Material</b>	Lanced aluminum	<b>Number of Fans</b>	6
<b>Ambient Air Temp.</b>	95.0 F	<b>Total airflow</b>	55218 cfm		

### Unit Electrical

Unit				RLA	LRA
<b>Compressor Starter</b>	Across the line	<b>Incoming Power Line Conn. Type</b>	Single point	<b>Compressor A</b>	25.00 A
<b>Total Power</b>	80.81 kW	<b>Power Line Conn. Type</b>	Circuit breaker	<b>Compressor B</b>	33.00 A
<b>Compressor Power</b>	73.20 kW	<b>Short Circuit Current Option</b>	Default	<b>Compressor D</b>	33.00 A
<b>Fan Power</b>	7.330 kW	<b>Short Circuit Current Rating</b>	5000 A	<b>Compressor E</b>	25.00 A
<b>Fan FLA</b>	3.20 A	<b>Single Point Power MCA</b>	145 A		
		<b>Single Point Power MOP</b>	175 A		

### Physical Information

Dimensions		Weights		Refrigerant Charge	Oil Charge
<b>Length</b>	150 in	<b>Operating Weight</b>	5121 lb	<b>Circuit 1</b>	48.0 lb
<b>Width</b>	88 in	<b>Shipping Weight</b>	5045 lb	<b>Circuit 2</b>	48.0 lb
<b>Height</b>	85 in				3.54 gal

### Unit Acoustics (A-Weighted)

A-Weighted	Sound Power	Sound Pressure*	Unit Sound Package
<b>100%</b>	92 dBA	66 dBA	Super quiet

Note: In Accordance with AHRI 370

\*Note: at 30 feet in free field



## Warranty

Standard Warranty

## Regulatory Compliance

### ASHRAE 90.1

This unit complies with the efficiency requirements of ASHRAE 90.1 and CSA C743 - all versions up to 2016.

Certified in accordance with the AHRI Air-Cooled Water-Chilling Packages Certification Program, which is based on AHRI Standard 550/590 (I-P) and AHRI Standard 551/591 (SI). Certified units may be found in the AHRI Directory at [www.ahridirectory.org](http://www.ahridirectory.org).



## Information for LEED Projects

<b>Refrigerant (R410A) - ckt 1</b>	48.0 lb	<p>This product meets the minimum efficiency requirements of ASHRAE Standard 90.1 and CANS/CSA C743 for all versions (which are based on AHRI standard rating conditions) and, therefore, also meets the LEED "Minimum Energy Performance" prerequisite in the Energy and Atmosphere section.</p> <p>The LEED Green Building Rating System™, developed by the U.S. Green Building Council, provides independent, third-party verification that a building project meets green building and performance measures.</p>
<b>Refrigerant (R410A) - ckt 2</b>	48.0 lb	
<b>Rated Capacity (AHRI)</b>	67.00 tons	
<b>Rated Efficiency (AHRI)</b>	10.05 EER (Btu/W-h)	
<b>IPLV</b>	15.26 EER (Btu/W-h)	
<b>Refrigeration Capacity</b>	67.69 tons	
<b>Cooling Efficiency</b>	10.05 EER (Btu/W-h)	
<b>Compress Power</b>	73.20 kW	
<b>Fan Motor Power</b>	7.330 kW	

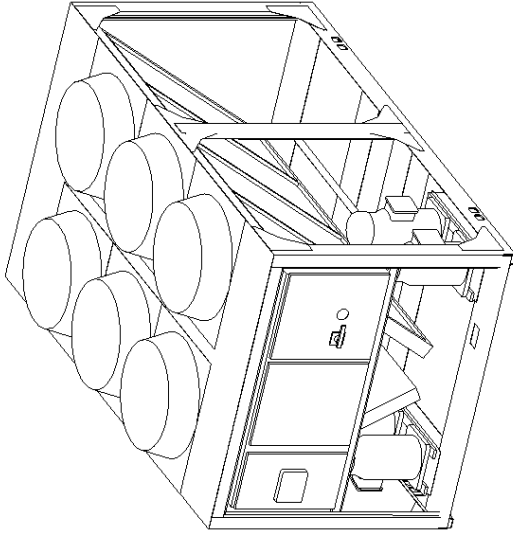
Trane Select Assist Version Number: 257  
Data Generation Date: 3/22/2022

INLET/OUTLET WATER  
CONNECTION SIZE

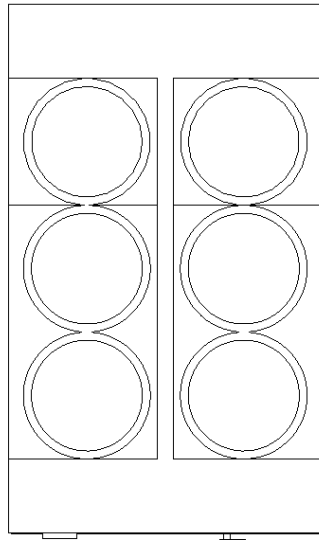
3" (80mm)

BRAZE PLATE  
WATER VOLUME/STORAGE

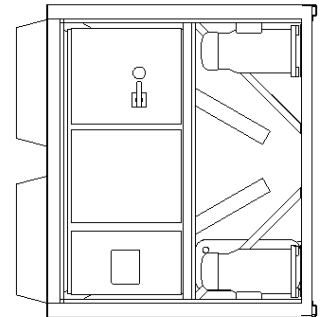
7.5 GAL (28.4 LITERS)



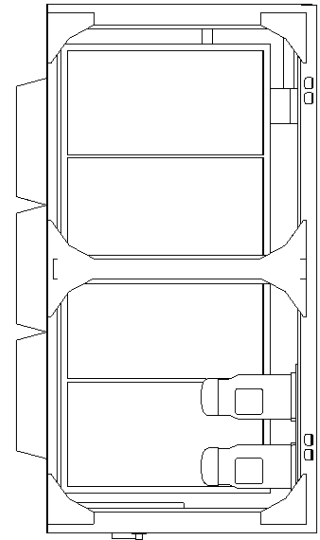
ISOMETRIC VIEW



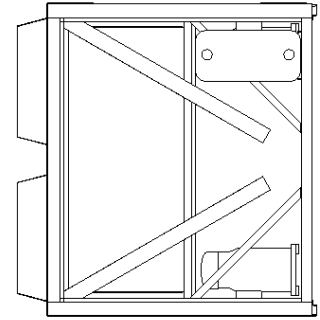
TOP VIEW



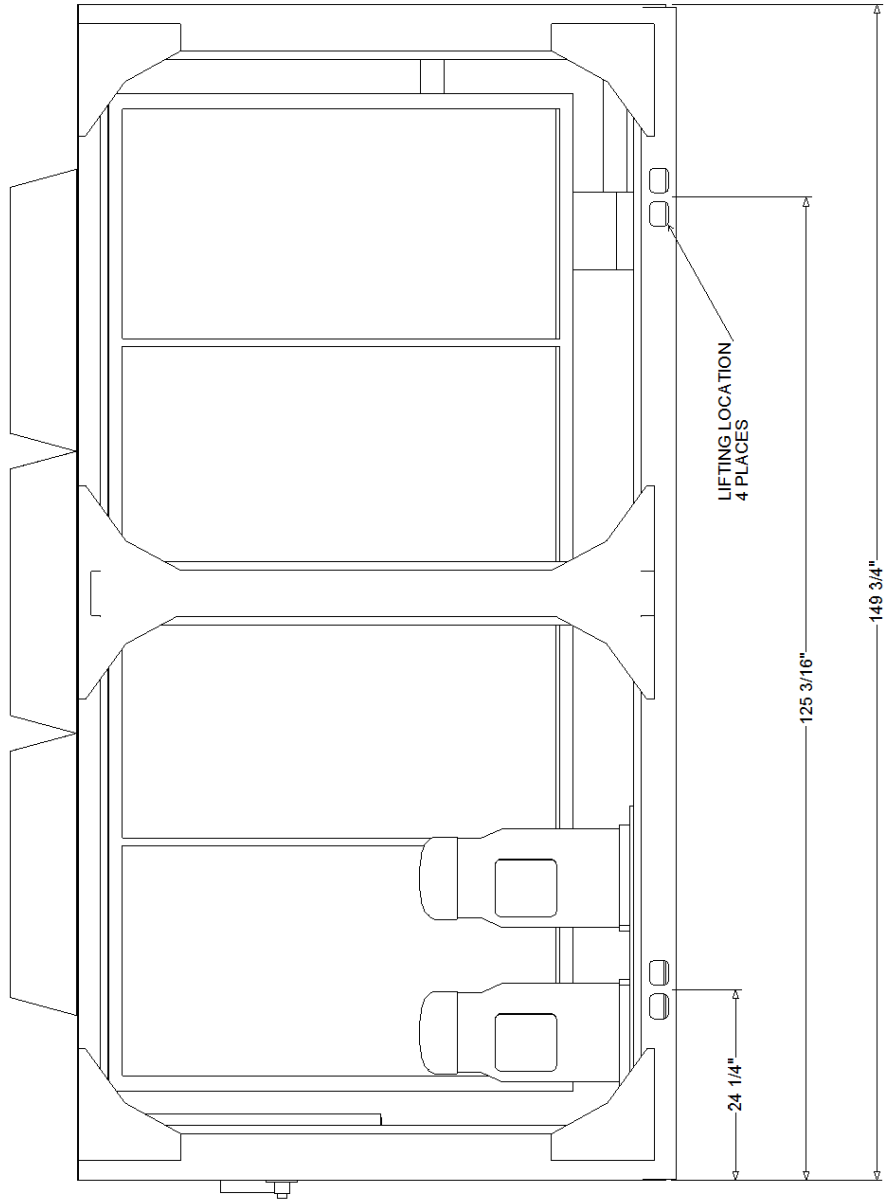
FRONT VIEW



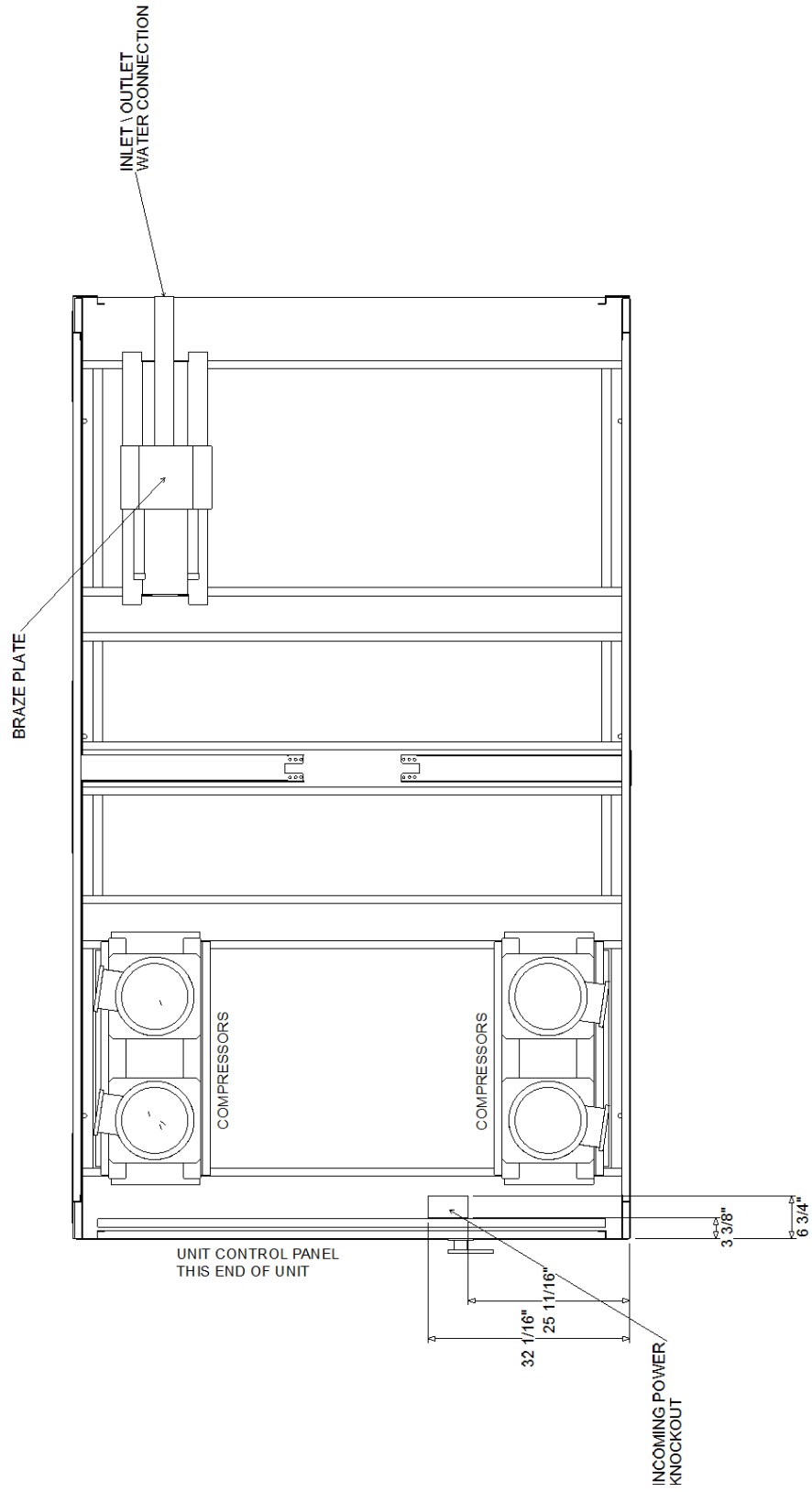
RIGHT SIDE VIEW



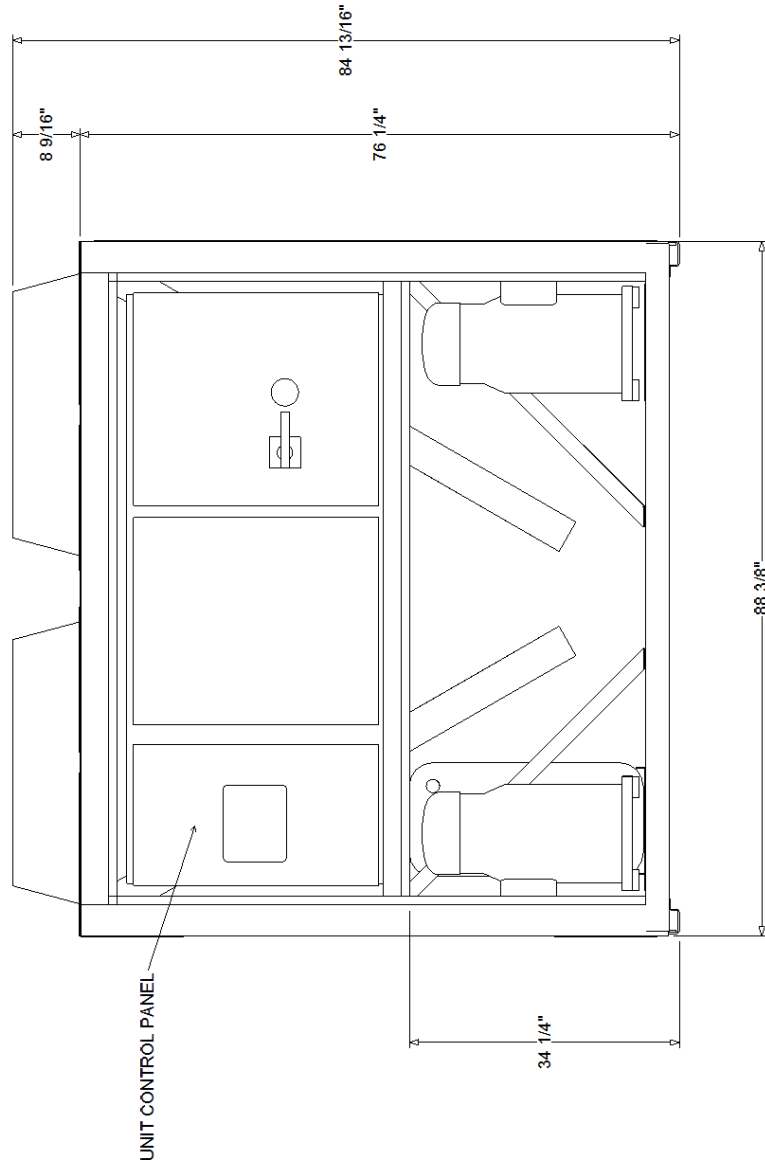
BACK VIEW



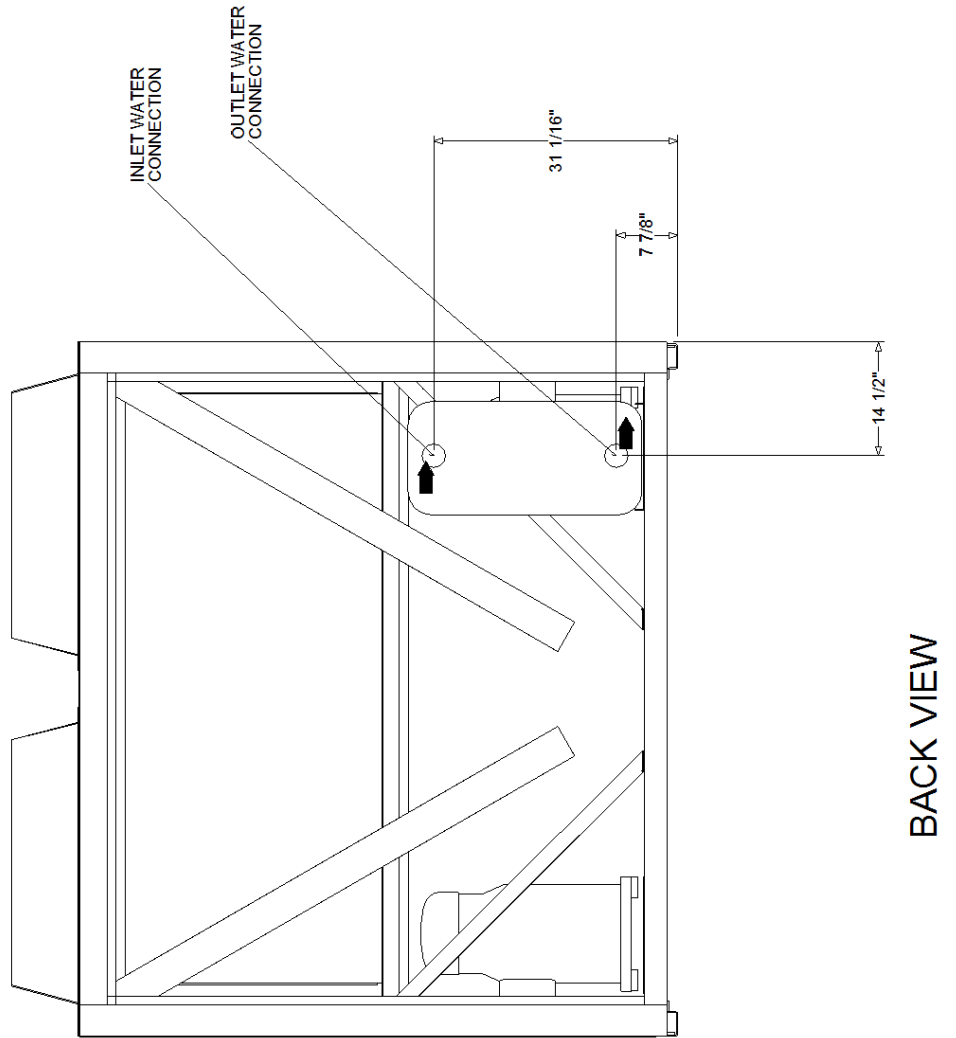
RIGHT SIDE VIEW

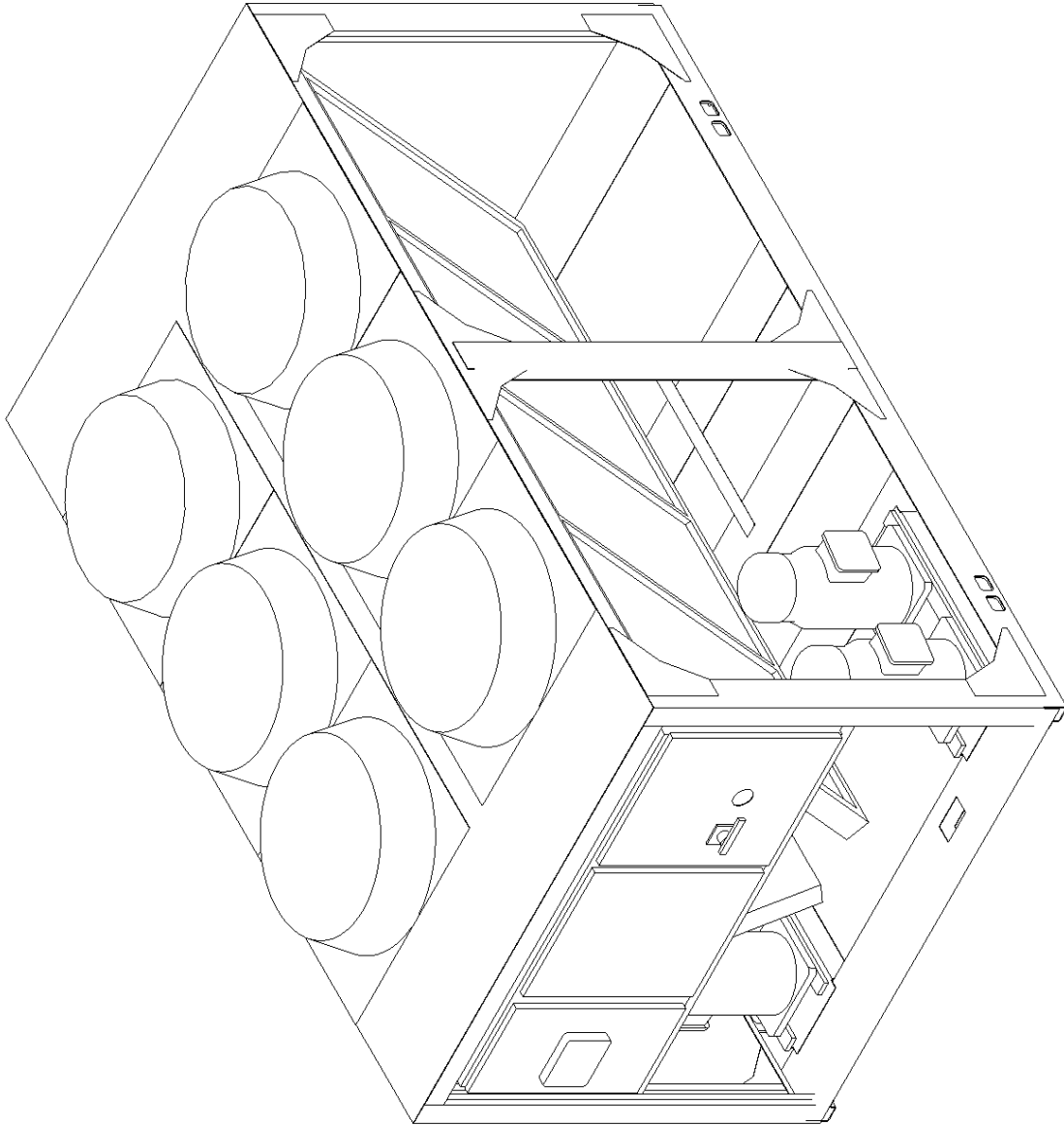


**TOP VIEW**  
 CONDENSER, CONTROL PANEL AND  
 VSD (WHEN ORDERED) REMOVED FOR CLARITY



FRONT VIEW



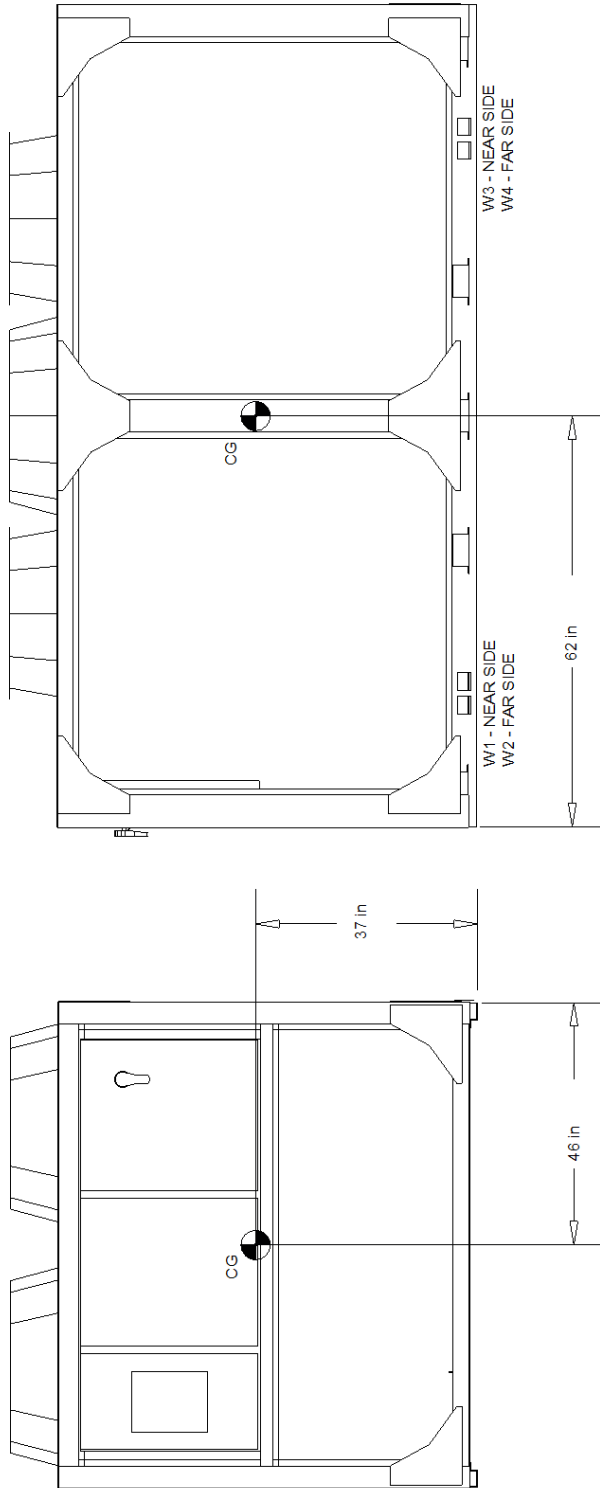


ISOMETRIC VIEW



# UNIT CENTER OF GRAVITY

LIFTING WEIGHTS			
W1	W2	W3	SHIPPING WEIGHT
1,529 lb	1,595 lb	895 lb	5,045 lb
		933 lb	



**SIDE VIEW**

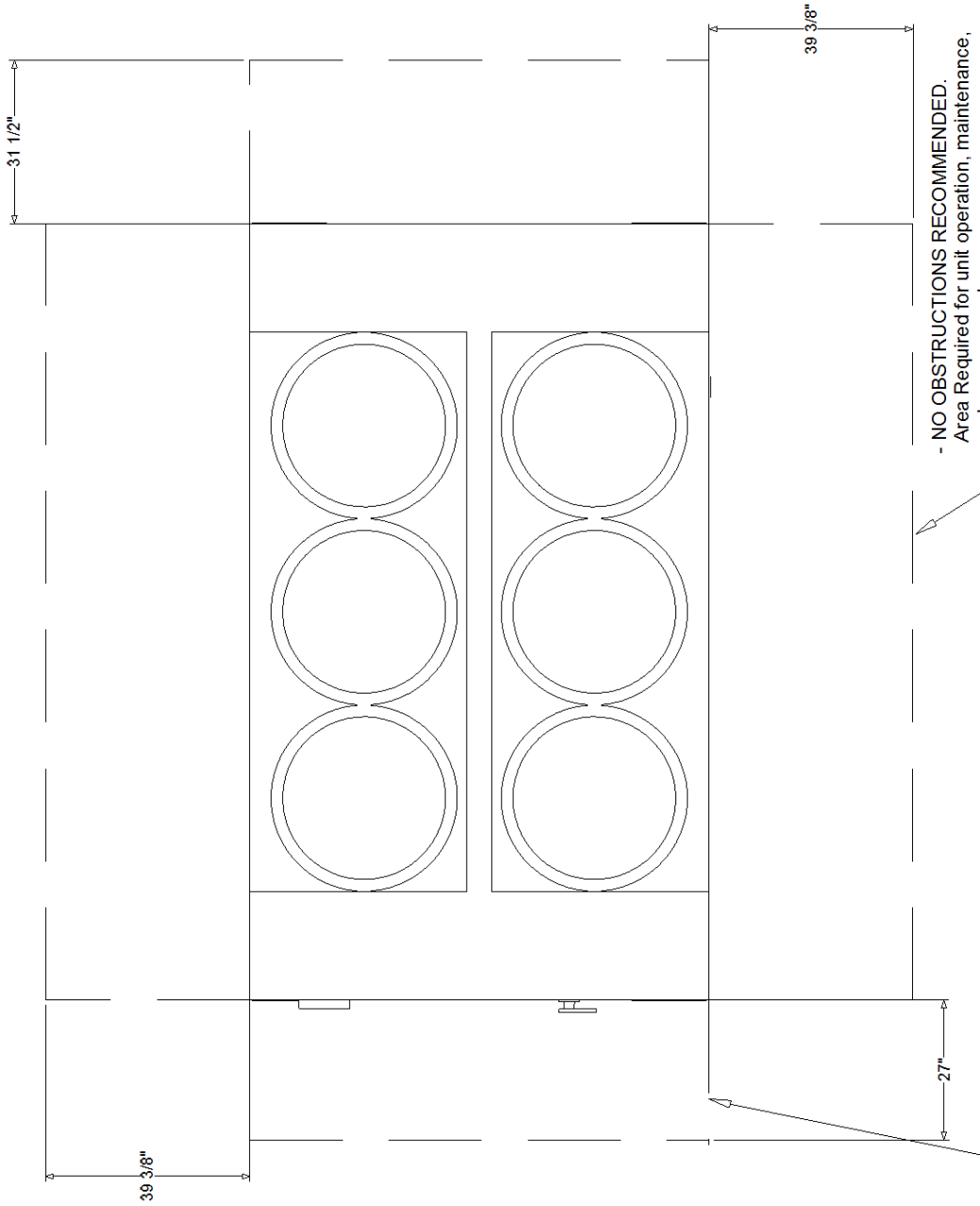
**FRONT VIEW  
CONTROL PANEL END**

Different unit configurations and options may cause a variation in the center of gravity from what is listed. Refer to the Installation, Operating and Maintenance manual for specific lifting instructions.

# UNIT CLEARANCE

NO OBSTRUCTIONS ABOVE THE CONDENSER

## TOP VIEW



The distance provided is the minimum clearance required for the door(s) to swing fully open. The unit may require additional clearance per NFPA 70 (NEC) Article 110.26. All National, State and Local electrical codes shall be followed when installing the unit.

- NO OBSTRUCTIONS RECOMMENDED. Area Required for unit operation, maintenance, and access panel.
- MORE CLEARANCE MAY BE NEEDED FOR AIRFLOW DEPENDING UPON THE INSTALLATION. REFER TO THE CLOSE SPACING BULLETIN.

# UNIT RIGGING

LIFTING A UNIT WITH EQUAL LENGTH STRAPS WILL NOT PRODUCE A LEVEL UNIT DURING THE LIFT BECAUSE THE CG WILL NOT BE AT THE MIDPOINT BETWEEN THE BASE LIFTING HOLES. THE FOLLOWING ADJUSTMENTS MUST BE MADE TO PRODUCE A LEVEL LIFT:

- SINGLE SPREADER BAR LIFTING METHOD  
IF THE UNIT CG IS CLOSER TO THE CONTROL PANEL, THE STRAPS ON THE CONTROL PANEL SIDE OF THE SPREADER BAR MUST BE ADJUSTED TO BE SHORTER THAN THOSE ON THE OPPOSITE SIDE OF THE SPREADER BAR, ALLOWING THE SPREADER BAR TO MOVE TOWARD THE CONTROL PANEL AND OVER THE UNIT CG. SEVERAL ADJUSTMENTS OF THE STRAP LENGTH MAY BE REQUIRED TO PRODUCE A LEVEL UNIT DURING LIFT.
- H-TYPE SPREADER BAR LIFTING METHOD  
IF THE STRAPS FROM THE H BAR TO THE UNIT BASE ARE THE SAME LENGTH, THE CRANE LIFTING POINT ON THE CENTER WEB OF THE H BAR MUST BE ADJUSTED TO PRODUCE A LEVEL UNIT LIFT.



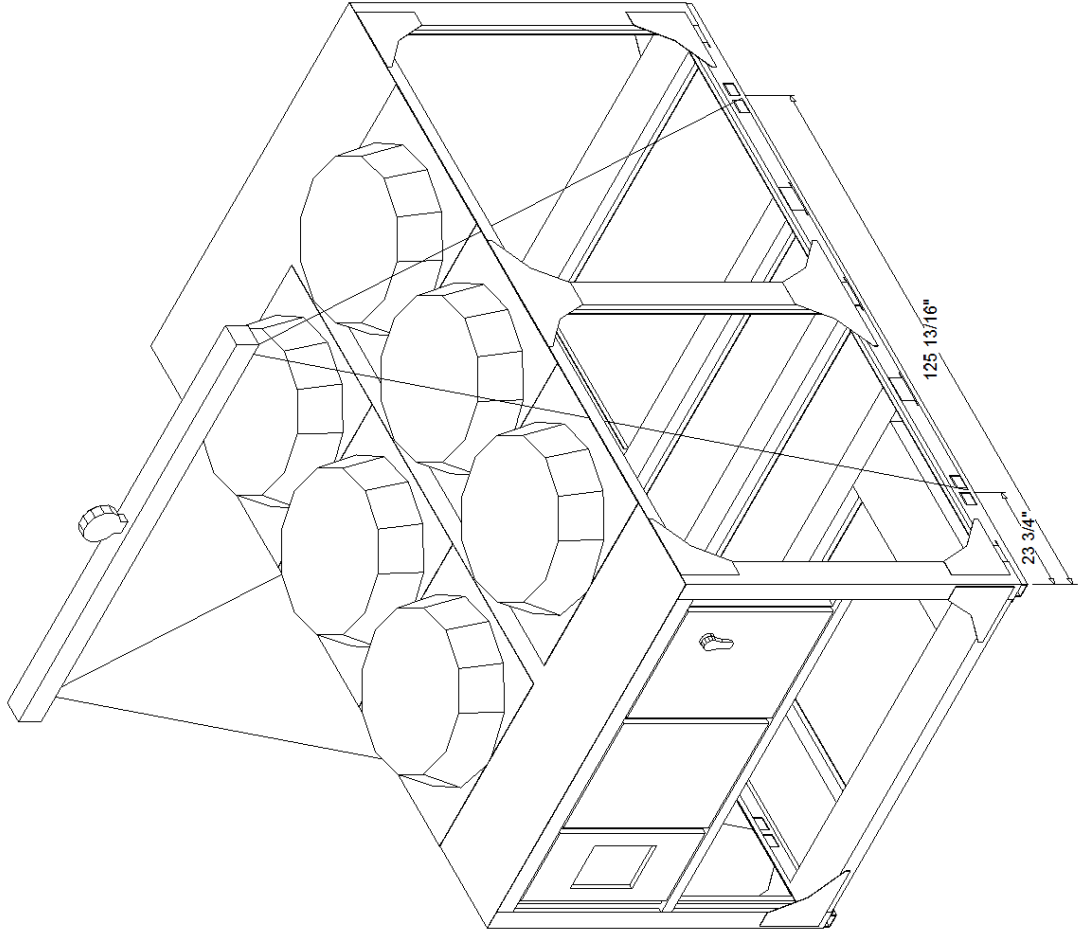
## WARNING

### IMPROPER LIFTING AND MOVING!

USE SPREADER BAR AS SHOWN IN DIAGRAM. REFER TO INSTALLATION MANUAL OR NAMEPLATE FOR UNIT WEIGHT. REFER TO INSTALLATION INSTRUCTIONS LOCATED INSIDE CONTROL PANEL FOR FURTHER RIGGING INFORMATION.

OTHER LIFTING ARRANGEMENTS COULD RESULT IN DEATH, SERIOUS INJURY OR EQUIPMENT DAMAGE.

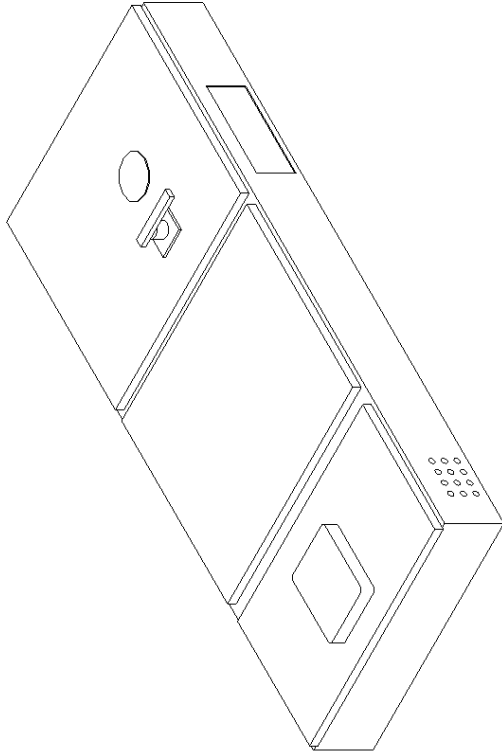
DO NOT ALLOW LIFTING STRAPS TO CONTACT UNIT DURING LIFT!



# ISOMETRIC VIEW

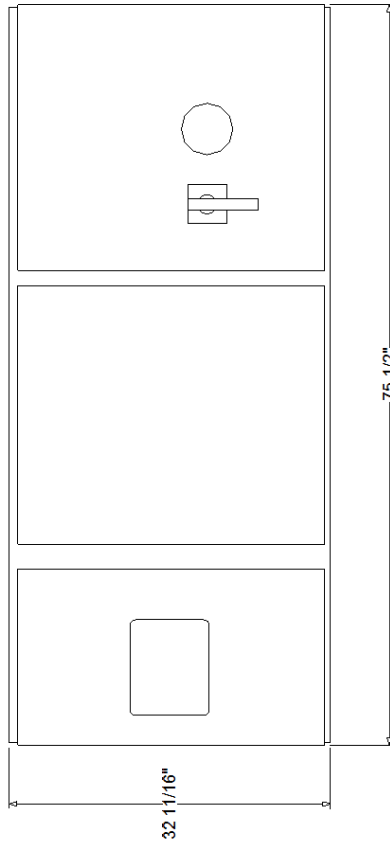
SHORT CIRCUIT RATING

5kA

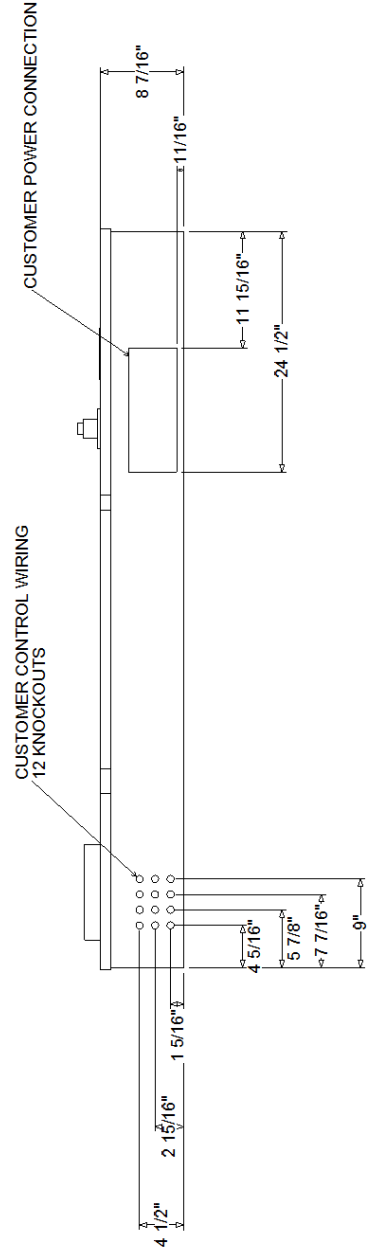


ISOMETRIC VIEW

CUSTOMER WIRE SELECTION TABLE			
POWER WIRE CONNECTION TO CIRCUIT BREAKER (1Q1)			
UNIT SIZE	UNIT EFF	VOLTAGE	CIR 1 & 2 (SINGLE POINT POWER) LUG WIRE SIZE RANGE (PER PHASE)
070	HIGH	460	(1 MAX Conductor per phase) #4-4/0



FRONT VIEW

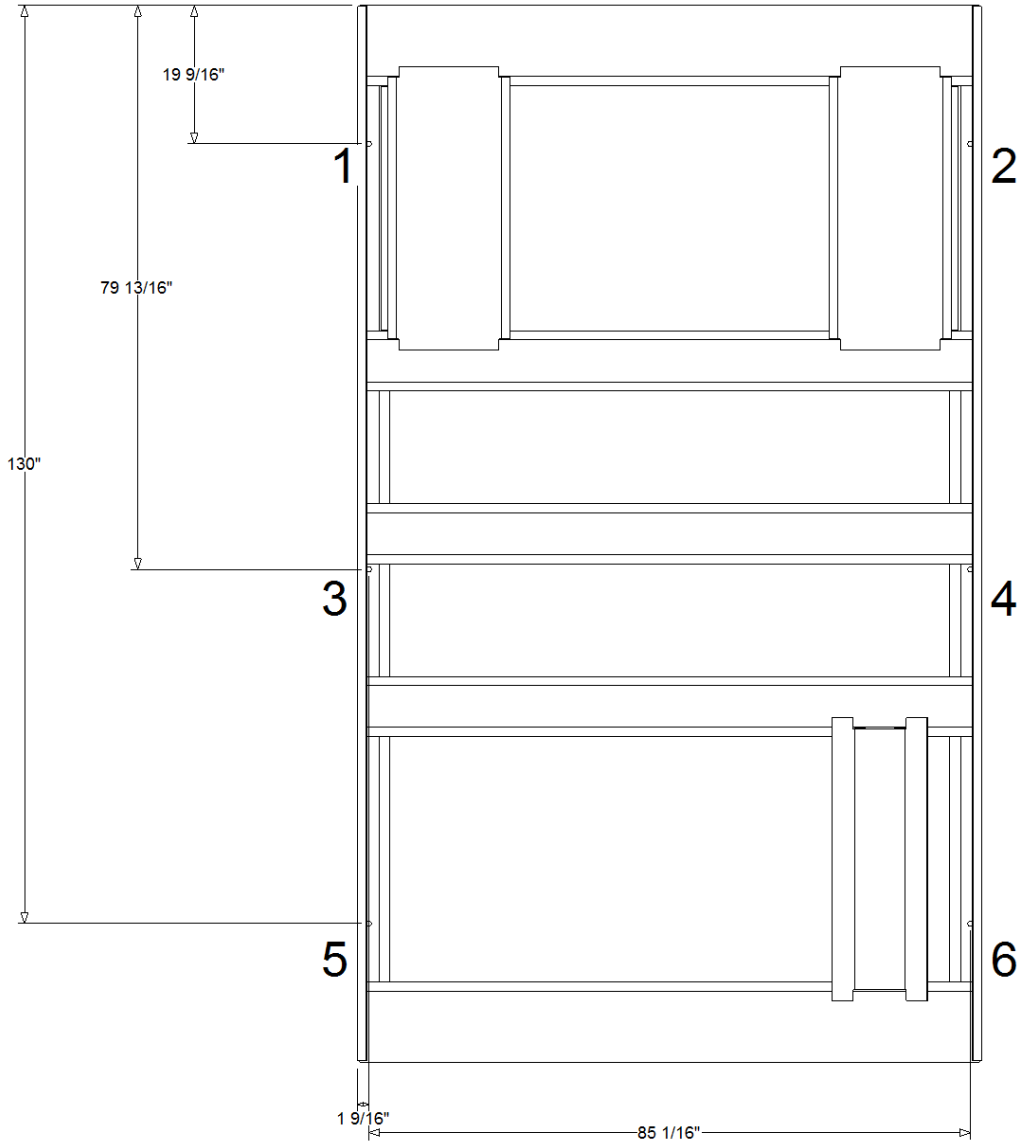


BOTTOM VIEW

UNIT SIZE	MOUNTING LOCATIONS & POINT LOAD WEIGHTS						TOTAL OPERATING WEIGHT
	1	2	3	4	5	6	
070	1,117 lb	1,210 lb	781 lb	849 lb	511 lb	557 lb	5,121 lb

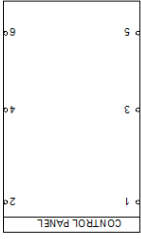
MOUNTING HOLE DIAMETER 3/4"

## CONTROL PANEL



## TOP VIEW

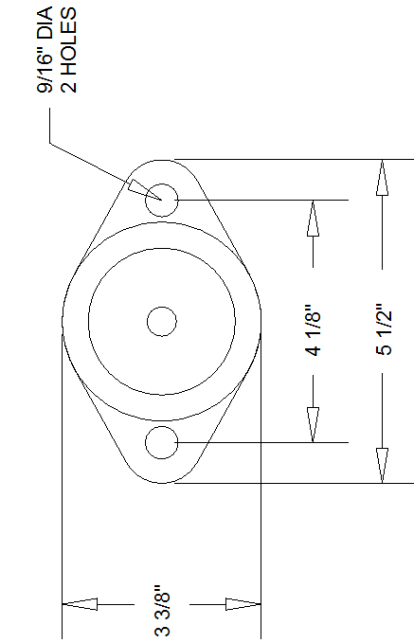
DIMENSIONS ARE REFERENCED FROM THE END AND SIDE OF THE UNIT BASE



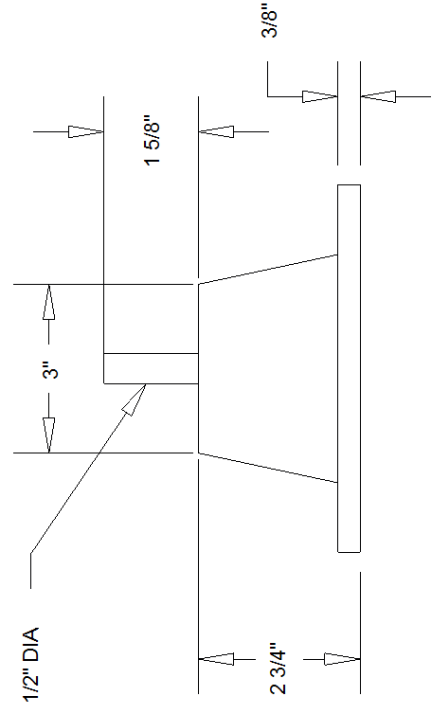
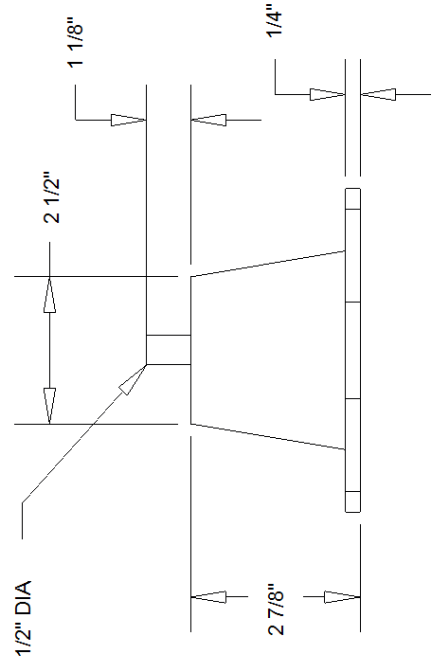
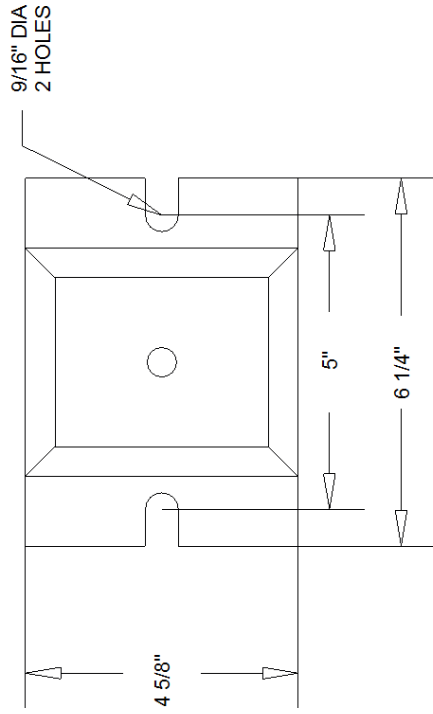
SEE ISOLATOR POINT LOADS FOR DETAILED INFORMATION ON ISOLATOR LOCATIONS.

UNIT SIZE	MOUNTING LOCATIONS AND ISOLATOR NUMBER					
	1	2	3	4	5	6
070	RDP-4 BRICK RED	RDP-4 BRICK RED	RDP-3 CHARCOAL	RDP-4 BROWN	RDP-3 CHARCOAL	RDP-3 CHARCOAL

### RDP-3 ISOLATORS



### RDP-4 ISOLATORS





- 1 SINGLE SOURCE POWER IS PROVIDED AS STANDARD ON THESE PRODUCTS, FIELD CONNECTIONS ARE MADE TO 1X1, OR 1Q2.
- 2 FOR VOLTAGES 200V/60HZ, 220V/50HZ, 380V/60HZ, 460V/60HZ, WIRE 26A SHALL BE CONNECTED TO H2. FOR VOLTAGES 230V/60HZ & 575V/60HZ, WIRE 26A SHALL BE CONNECT TO H3. 400V/50HZ UNIT IS FACTORY WIRE WITH 26A CONNECTED TO H3 - RECONNECT WIRE 26A TO H2 FOR 380V/50HZ, OR H4 FOR 415V/50HZ. H4 IS ONLY AVAILABLE WITH 400V/50HZ PANELS.
- 3 FIELD CONNECTIONS ARE ONLY MADE IN A CUSTOMER PROVIDED PUMP (PTYP=NONE). THESE CONNECTIONS WILL BE MADE BY THE FACTORY WHEN THE PUMP IS PROVIDED BY THE FACTORY (PTYP=DHHP).
- 4 CUSTOMER SUPPLIED POWER 115/60/1 OR 220/50/1 TO POWER RELAYS. MAX FUSE SIZE IS 20 AMPS. GROUND ALL CUSTOMER SUPPLIED POWER SUPPLIES AS REQUIRED BY APPLICABLE CODES. GREEN GROUND SCREWS ARE PROVIDED IN UNIT CONTROL PANEL.
- 5 WIRE TO NEXT UNIT. 22 AWG SHIELDED COMMUNICATION WIRE EQUIVALENT TO HELIX LF22P0014216 RECOMMENDED. THE SUM TOTAL OF ALL INTERCONNECTED CABLE SEGMENTS NOT TO EXCEED 4500 FEET. CONNECTION TOPOLOGY SHOULD BE DAISY CHAIN. REFER TO BUILDING AUTOMATION SYSTEM (BAS) COMMUNICATION INSTALLATION LITERATURE FOR END OF LINE TERMINATION RESISTOR REQUIREMENTS.
- 6 WIRE TO TRACER OR OTHER TRANE REMOTE DEVICE. 22 AWG SHIELDED COMMUNICATION WIRE EQUIVALENT TO HELIX LF22P0014216 RECOMMENDED. THE SUM TOTAL OF ALL INTERCONNECTED CABLE SEGMENTS NOT TO EXCEED 4500 FEET. CONNECTION TOPOLOGY SHOULD BE DAISY CHAIN. REFER TO BUILDING AUTOMATION SYSTEM (BAS) COMMUNICATION INSTALLATION LITERATURE FOR END OF LINE TERMINATION RESISTOR REQUIREMENTS.
- 7 WIRE TO CUSTOMER CHILLED WATER SET POINT 2-10V OR 4-20mA
- 8 WIRE TO CUSTOMER EXTERNAL DEMAND LIMIT 2-10V OR 4-20mA
- 9 WIRE TO CUSTOMER 2-10V OR 4-20mA % CAPACITY ANNUNCIATOR.
- 10 CUSTOMER SUPPLIED POWER 115/60/1 TO CONVENIENCE OUTLET. MAX FUSE SIZE IS 25A. GROUND ALL CUSTOMER SUPPLIED POWER SUPPLIES AS REQUIRED BY APPLICABLE CODES. GREEN GROUND SCREWS ARE PROVIDED IN UNIT CONTROL PANEL.
11. REFER TO CGAM ELECTRICAL SCHEMATIC FOR SPECIFIC ELECTRICAL CONNECTION INFORMATION AND NOTES PERTAINING TO WIRING INSTALLATION.
- 12) ALL UNIT POWER WIRING MUST BE 600 VOLT COPPER CONDUCTORS ONLY AND HAVE A MINIMUM TEMPERATURE INSULATION RATING OF 90 DEGREE C. REFER TO UNIT NAMEPLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION DEVICE. PROVIDE AN EQUIPMENT GROUND IN ACCORDANCE WITH APPLICABLE ELECTRIC CODES. REFER TO WIRE RANGE TABLE FOR LUG SIZES.
13. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH NATIONAL ELECTRIC CODE AND LOCAL REQUIREMENTS.
14. ALL CUSTOMER CONTROL CIRCUIT WIRING MUST BE COPPER CONDUCTORS ONLY AND HAVE A MINIMUM INSULATION RATING OF 300 VOLTS. EXCEPT AS NOTED, ALL CUSTOMER WIRING CONNECTIONS ARE MADE TO CIRCUIT BOARD MOUNTED BOX LUGS WITH A WIRE RANGE OF 14 TO 18 AWG OR DIN RAIL MOUNTED SPRING FORCE TERMINALS.
- 15) UNIT PROVIDED DRY CONTACTS FOR THE CONDENSER/CHILLED WATER PUMP CONTROL. RELAYS ARE RATED FOR 7.2 AMPS RESISTIVE, 2.88 AMPS PILOT DUTY, OR 1/3 HP, 7.2 FLA AT 120 VOLTS 60 HZ, CONTACTS ARE RATED FOR 5 AMPS GENERAL PURPOSE DUTY 240 VOLTS.
- 16) CUSTOMER SUPPLIED CONTACTS FOR ALL LOW VOLTAGE CONNECTIONS MUST BE COMPATIBLE WITH DRY CIRCUIT 24 VOLTS DC FOR A 12 mA RESISTIVE LOAD. SILVER OR GOLD PLATED CONTACTS RECOMMENDED.
- 17) FIELD CONNECTIONS ARE ONLY MADE IN A CUSTOMER PROVIDED PUMP. THESE CONNECTIONS WILL BE MADE BY THE FACTORY WHEN THE PUMP IS PROVIDED BY THE FACTORY. CUSTOMER SUPPLIED POWER 115V, 60Hz, 1PH.
- 18) CUSTOMER SUPPLIED 3 PHASE POWER.
- 19) OPTIONAL FIELD ASSIGNED PROGRAMMABLE RELAYS (STAT=PRLY). CLASS 1 FIELD WIRE MODULE, RELAY AT 120V: 7.2A RESISTIVE 2.88A PILOT DUTY, 1/2HP 7.2FLA; AT 240VAC: 5 AMPS GENERAL PURPOSE.
- 20) WIRE TO CUSTOMER 0-10 VDC PUMP SPEED SIGNAL.
- 21) WHEN FACTORY PROVIDED PUMP IS NOT SELECTED. CUSTOMER MUST SUPPLY SUITABLE PUMP SYSTEM. REFER TO PUMP MANUFACTURER FOR WIRING REQUIREMENTS.
- 22) THE CONTACTS FOR AUTO STOP AND EMERGENCY STOP SWITCHES ARE JUMPERED AT THE FACTORY BY JUMPERS W2 & W3 TO ENABLE UNIT OPERATION. IF REMOTE CONTROL IS DESIRED, REMOVED THE JUMPERS AND CONNECT TO THE DESIRED CONTROL CIRCUIT.
- 23) 1A15, LCI MODULE USED WHEN (COMM = LCI).
- 24) 1A41, BACNET INTERFACE MODULE USED WHEN (COMM = BCNT).



## Foundation

Provide rigid, non-warping mounting pads or a concrete foundation of sufficient strength and mass to support the applicable operating weight (i.e. including completed piping, and full operating charges of refrigerant, oil and water). The expectation of Trane equipment is that piping is fully supported by an independent structure/system, without being connected to the waterbox. Once in place, the unit must be level within 1/2" across the length and width of the unit. The Trane Company is not responsible for equipment problems resulting from an improperly designed or constructed foundation.

## Center Of Gravity

Different unit configurations and options may cause a variation in the center of gravity from what is listed in the submittal.. Refer to the Installation, Operating and Maintenance manual for specific lifting instructions.

## General

Units are constructed of a galvanized steel frame with galvanized steel panels and access doors. Component surfaces are finished with a powder-coated paint.

Each unit ships with full operating charges of refrigerant and oil.

## Compressor and Motor

The unit is equipped with four hermetic, direct-drive, 3600 rpm 60 Hz suction gas-cooled scroll compressors. The simple design has only three major moving parts and a completely enclosed compression chamber which leads to increased efficiency. Overload protection is internal to the compressors. The compressor includes: centrifugal oil pump, oil level sight glass and oil charging valve. Each compressor will have compressor heaters installed and properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles.

## Unit-Mounted Starter

The control panel is designed per UL 1995. The starter is in an across-the-line configuration, factory-mounted and fully pre-wired to the compressor motor and control panel. Typically, Trane scroll compressors are up to full speed in one second when started across-the-line.

A factory-installed, factory-wired 820 VA control power transformer provides all unit control power (120 Vac secondary) and Trane CH530 module power (24 Vac secondary).

A molded case standard interrupting capacity circuit breaker, factory pre-wired with terminal block power connections and equipped with a lockable external operator handle, is available to disconnect the chiller from main power.

## Power Connection

Power connections include main three-phase power and one separate 115V, 20 amp customer provided single phase power connection is required to power the heaters (if used for freeze protection).

Short circuit current rating of 5 kA is provided.

## Evaporator

Braze plate evaporator is made of stainless steel with copper as the braze material. It is designed to withstand a refrigerant side working pressure of 430 psig (29.6 bars) and a waterside working pressure of 150 psig (10.5 bars). Evaporator is tested at 1.1 times maximum allowable refrigerant side working pressure and 1.5 times maximum allowable water side working pressure. It has one water pass. A water strainer and a flow switch are factory installed.

Immersion heaters protect the evaporator to an ambient of -20°F (-29°C).

All evaporators have grooved pipe connections.

Note: An additional 115V, 20 amp field provided single phase power connection is required to power the heaters (if used for freeze protection).

## Condenser

Air-cooled condenser coils have lanced aluminum fins mechanically bonded to internally-finned copper tubing.

The condenser coil has an integral sub-cooling circuit. The maximum allowable working pressure of the condenser is 650 psig (44.8 bars). Condensers are factory proof tested at 650 psig (44.8 bars).

Direct-drive vertical discharge condenser fans are balanced and individually protected. Three-phase condenser fan motors with permanently lubricated ball bearings and external thermal overload protection are provided.

The unit starts and operates from 32.0 F to 125.0 F.

## Refrigerant Circuits

The unit has dual refrigerant circuits. Each refrigerant circuit has Trane scroll compressors piped in parallel with a passive oil management system. A passive oil management system maintains proper oil levels within compressors and has no moving parts. Each refrigerant circuit includes filter drier, electronic expansion valve, liquid line and discharge service valves. Capacity modulation is achieved by turning compressors on and off. The unit has four capacity stages.

## Unit Controls

The microprocessor-based control panel is factory-installed and factory-tested. The control system is powered by a pre-wired control power transformer, and will turn on and off compressors to meet the load. Microprocessor-based chilled water reset based on return water is standard. The unit comes with a factory installed flow switch.

The Trane CH530 microprocessor automatically acts to prevent unit shutdown due to abnormal operating conditions associated with low evaporator refrigerant temperature and high condensing temperature. If an abnormal operating condition continues and the protective limit is reached, the machine will shut down.

The panel includes machine protection for the following conditions: low evaporator refrigerant temperature and pressure, high condenser refrigerant pressure, critical sensor or detection circuit faults, lost communication between modules, phase loss, phase reversal, over temperature protection, external and local emergency stop, and loss of evaporator water flow.

When a fault is detected, the control system conducts more than 100 diagnostic checks and displays results. The display will identify the fault, indicate date, time, and operating mode at time of occurrence, and provide type of reset required and a help message.

Data contained in available reports includes: water and air temperatures, refrigerant pressures and temperatures, flow switch status, EXV position, and compressor starts and run-time. All necessary settings and setpoints are programmed into the microprocessor-based controller via the operator interface. The controller is capable of receiving signals simultaneously from a variety of control sources, in any combination, and priority order of control sources can be programmed.

## Communications

BACNet Interface allows the user to easily interface using BACNet MS/TP via a single twisted-pair wiring to a factory-installed and tested communication board.

## Architectural Louvered Panels

Louvered panels cover the complete condensing coil and service area beneath the condenser.

## Isolators

Molded elastomeric isolators, sized to reduce vibration transmission to the supporting structure when the unit is installed, ship with the chiller.